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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Tokuro OZAWA

Group Art Unit: 2675

Application No.: 09/689,658

Examiner: A. Awad

Filed: October 13, 2000

Docket No.: 107260

For: DRIVING CIRCUIT FOR ELECTRO-OPTICAL DEVICE, ELECTRO-OPTICAL DEVICE, AND ELECTRONIC EQUIPMENT

**RECEIVED**

APR 14 2004

Technology Center 2600

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In reply to the January 13, 2004 Office Action, reconsideration of the rejection is respectfully requested in light of the following remarks.

Claims 10-27 are pending in this application. Claims 10-14, 17 and 19 are allowed.

Reconsideration based on the following remarks is respectfully requested.

**I. The Claims Define Allowable Subject Matter**

**A. Claim Rejections Under 35 U.S.C. §102**

The Office Action rejects claims 15 and 18 under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent No. 5,192,945 to Kusada. Applicant respectfully traverses this rejection.

The Office Action asserts that Kusada teaches sampling and hold switches that samples a first analog signal (col. 20, lines 51-68), A/D converters (Fig. 14), for converting a first analog signal that is supplied through a corresponding sample switch into a digital signal,

once per horizontal scanning period (col. 21, lines 52-58). The Office Action also states that Kusada shows that the signal is provided for one horizontal period.

Applicant respectfully submits that Kusada does not disclose or teach all of the features recited in claim 15. Specifically, Kusada fails to disclose or teach converting the first analog signal held in the sampling circuit into a digital signal, as recited in claim 15.

Instead, Kusada merely discloses A/D converters 101-106 that are disposed upstream from the analog switches 150 and the analog sample and hold circuit 151 with respect to the direction of the signal flow. Thus, the A/D converters could not possibly convert the analog signal held in the analog sample and hold circuit 151.

Furthermore, as shown in Fig. 11, a line memory circuit 142 is connected to four source drivers 143-146. As shown in Fig. 14 the line memory circuit 142 includes the A/D converters 101-106 and latches 129-134. Fig. 13 shows the source drivers 143-146 include analog switches 150 and the analog sample and hold circuit 151. The line memory circuit 142 outputs analog signals to the sources drivers 143-146, and the source drivers 143-146 output analog signals to the liquid crystal panel 147.

Applicant respectfully submits that since claim 18 depends from claim 15, that claim 18 is allowable at least for the same reasons as claim 15.

Withdrawal of the rejection of claims 15 and 18 is respectfully requested.

**B. Claim Rejections Under 35 U.S.C. §103**

The Office Action rejects claims 16 and 20-27 under 35 U.S.C. §103(a) as being unpatentable over Kusada, in view of U.S. Patent No. 6,256,024 to Maekawa. Applicant respectfully traverses this rejection.

Regarding claims 16 and 20-23, Applicant respectfully submits that since these claims depend from claim 15, that these claims are allowable at least for the same reasons as claim 15.

Regarding claims 24 and 25, the Office Action appears to assert that Kusada teaches all of the features recited in claim 24, except the feature of the A/D conversion circuit, storage device, and the D/A conversion circuit being disposed on the same substrate as a plurality of pixels. The Office Action asserts that Maekawa makes up for this deficiency. The Office Action states that Maekawa teaches that the N sampling switches, the N latches and the N D/A converters being disposed on one substrate. The Office Action cites col. 3, lines 48-53.

The Applicant respectfully submits that the cited combination of Kusada and Maekawa fails to teach or suggest all of the features recited in claims 24 and 25. Specifically, the cited combination fails to teach or suggest that the A/D conversion circuit, the storage device and the D/A conversion circuit being disposed on one substrate on which the plurality of pixels are disposed, as recited in claims 24 and 25.

The assertion that the cited combination teaches or suggests all of the features recited in claims 24 and 25 is the result of impermissible hindsight. The references do not contemplate or suggest additional elements (i.e., additional A/D converters, pixels) being disposed on the same substrate. Maekawa does not suggest that any other additional element could be placed on the same substrate including pixels.

Regarding claim 27, the Office Action states that the claim is substantially similar to independent claims 24 and 25, and would be analyzed as previously discussed with respect to claims 24 and 25.

The Applicant respectfully submits that the cited combination of Kusada and Maekawa fails to teach or suggest all of the features recited in claim 27. Specifically, Kusada fails to teach or suggest converting the first analog signal held in the sampling circuit into a digital signal, as recited in claim 27.

Instead, Kusada merely discloses A/D converters 101-106 that are disposed upstream from the analog switches 150 and the analog sample and hold circuit 151 with respect to the

direction of the signal flow. Thus, the A/D converters could not possibly convert the analog signal held in the analog sample and hold circuit 151.

Furthermore, as shown in Fig. 11, a line memory circuit 142 is connected to four source drivers 143-146. As shown in Fig. 14 the line memory circuit 142 includes the A/D converters 101-106 and latches 129-134. Fig. 13 shows each source drivers 143-146 includes analog switches 150 and the analog sample and hold circuit 151. The line memory circuit 142 outputs analog signals to the sources drivers 143-146, and the source drivers 143-146 output analog signals to the liquid crystal panel 147.

Maekawa fails to make up for this deficiency. Maekawa merely discloses converting a digital signal output from a latch into an analog signal and supplying the analog signal to a set of pixels.

It is respectfully submitted that since claim 26 depends from claim 25, claim 26 is allowable at least for the same reasons as claim 25.

Withdrawal of the rejection of claims 16 and 20-27 is respectfully requested.

## II. Conclusion

In view of the foregoing marks, Applicant respectfully submits that this application is in condition for allowance. Favorable reconsideration and prompt allowance of all of claims 10-27 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Date: April 13, 2004

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